

# SERVICE MANUAL

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MINIDISC PLAYER

BASIC MD MECHANISM : AZG-F A

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- This Service Manual is the "Revision Publishing" and replaces "Simple Manual" AM-HX70<AHK> (S/M Code No. 09-006-435-8T1).

**aiwa**  
S/M Code No. 09-009-435-8R1

REVISION  
DATA

## SPECIFICATIONS

<b>Main unit</b>	
<b>Playback system</b>	MiniDisc digital audio system
<b>Laser pickup</b>	Semiconductor laser
<b>Sampling Frequency</b>	44.1 kHz
<b>Number of channels</b>	Stereo: 2 channels Monaural: 1 channel
<b>D/A converter</b>	1-bit
<b>Frequency response</b>	40 to 20,000 Hz $\pm$ 4 dB 20 to 20,000 Hz $\pm$ 1 dB (10 kHz)
<b>Wow and Flutter</b>	Below measurable limit ( $\pm$ 0.00 1% W.PEAK)
<b>Output</b>	Phone jack
<b>Maximum output level</b>	8 mW + 8 mW (16 $\Omega$ )
<b>Power requirements</b>	DC 1.2 V using the supplied NI-MH rechargeable battery MHB-901 DC 1.5 V using an LR6 (size AA) dry cell battery AC house current using an optional AC adaptor
<b>Battery life</b>	Using the supplied rechargeable battery Approx. 19 hours (with power save on: approx. 25 hours) Using an LR6 (size AA) dry cell battery Approx. 29 hours (with power save on: approx. 38 hours) Using the supplied rechargeable battery and an LR6 (size AA) dry cell battery Approx. 51 hours (with power save on: approx. 67 hours)
<b>Maximum outside dimensions</b>	Approx. 71.6 (W) X 13.5 (H) X 77.7 (D) mm (excluding projected parts and controls)
<b>Weight</b>	Approx. 60 g excluding batteries.
<b>&lt;Battery charger RB-M02 K&gt;</b>	
<b>Rated voltage</b>	AC 240 V, 50 Hz

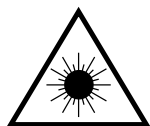
- Design and specifications are subject to change without notice.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.  
"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

### WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

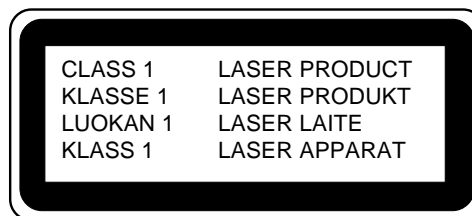
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.



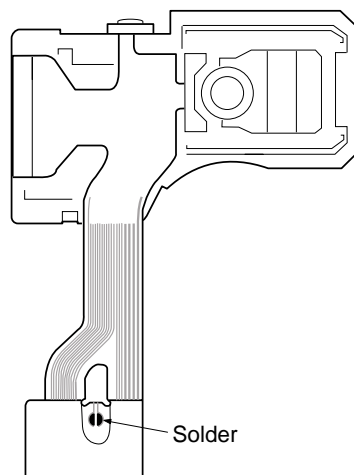
## Precaution to replace Optical block

### (KMS-330A)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in right figure.

PICK-UP Assy P.C.B



# DISASSEMBLY INSTRUCTIONS

## Disassembling and Notes on Reassembling

### 1. Removing the bottom panel

Remove the seven screws A. Open the battery lid and remove the bottom panel.

- Assemble the parts from the side of the headphone jack while being careful of the HOLD switch and battery lid.

### 2. Removing the main board

- 1) Short the short land of the pickup by soldering.
- 2) Remove the three connectors.
- 3) Remove three screws A and screw B.
- 4) While being careful of the FFC of the pickup, remove the main board.

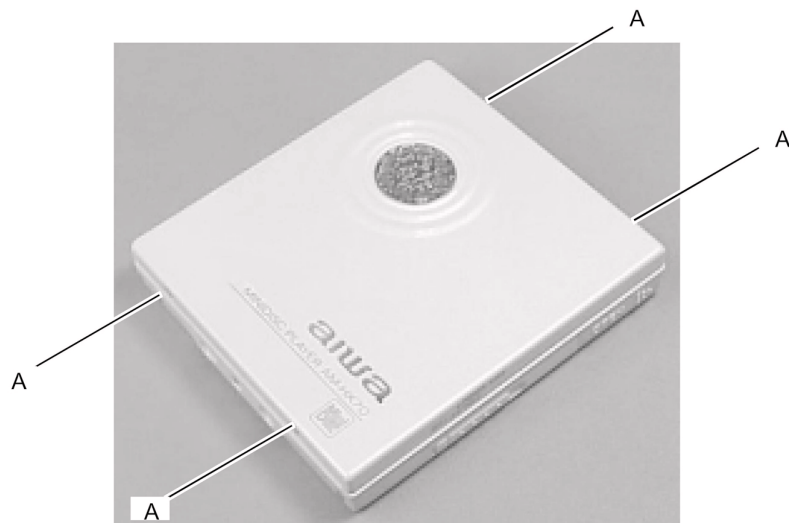
- When assembling the parts, fasten the screws from screw B and finally remove the short land of the pickup.

Pickup short land

### 3. Removing the Top Panel

Remove the four screws A.

- When assembling the parts, the claws of the holder should be hooked on the arm (two claws).



### 4. Removing the center frame

Be careful not to contact the pickup during the following procedure.

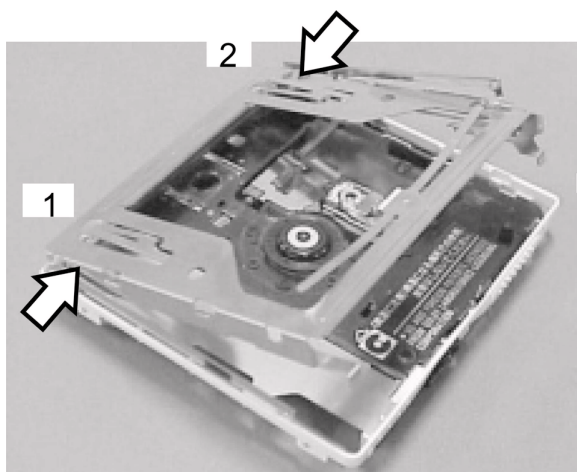
- 1) Remove the bottom panel and top panel.
- 2) Remove the battery hinge block.



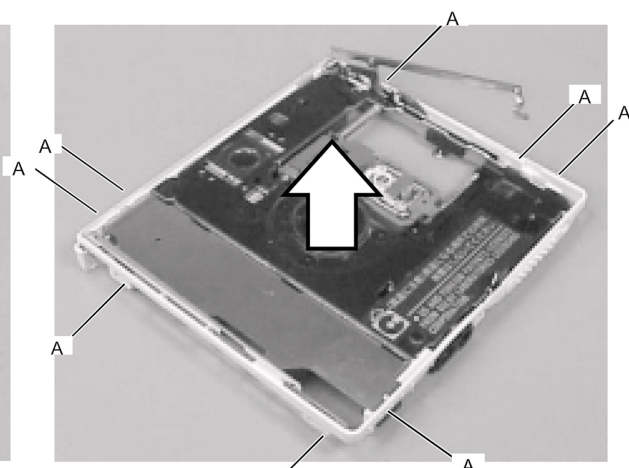
- 3) While bending the boss block of HLDR and CTRG, remove HLDR and CTRG in order of 1 and 2.

- When assembling the parts, insert the boss of HLDR and CTRG in order of 2 and 1.

- 4) Remove boss A from the center frame, and remove the center frame while lifting up the mechanism in the direction of the arrow.



3) HLDR, CTRG



4) Center frame

# ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC				C209	87-A10-533-080		C-CAP,V 15P-50 J CH
	87-A20-707-010		C-IC, CXA2523AR	C210	87-A10-533-080		C-CAP,V 15P-50 J CH
	87-A21-608-010		C-IC, CXD2665GA	C216	87-A10-765-080		C-CAP,V 0.033-10 K B
	8A-HM5-601-010		C-IC, MSM66573L-047TB-9	C217	87-A11-751-080		C-CAP,TN 22U-4 M P
	87-A21-724-040		C-IC, S-93C56AMFN	C219	87-A11-049-080		C-CAP,U 1-6.3 K B
	87-A21-038-040		C-IC, NJU7014R-TE2				
	87-A21-575-010		C-IC, BD6606KVT	C220	87-A11-049-080		C-CAP,U 1-6.3 K B
	87-A21-316-080		C-IC, S-8328B24MC	C301	87-A11-049-080		C-CAP,U 1-6.3 K B
	87-A20-861-040		C-IC, S-80808ANNP	C302	87-A10-561-080		C-CAP,V 0.01U-16 K B
	87-A20-982-040		C-IC, S-80822ANNP	C303	87-A10-561-080		C-CAP,V 0.01U-16 K B
	87-A21-627-040		C-IC, XC6367B102MR	C304	87-A10-561-080		C-CAP,V 0.01U-16 K B
	87-A21-341-040		C-IC, TA2131FL				
TRANSISTOR				C305	87-A10-770-080		C-CAP,V 0.1-10 K B
	89-115-884-080		CHIP -TRANSISTER 2SA1588Y	C306	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A30-148-080		C-TR, 2SC4738GR	C308	87-010-787-080		CAP, U 0.022-25
	87-026-644-080		C-TR, DTA144EE	C400	87-A10-556-080		C-CAP,V 2200P-50 K B
	87-A30-261-080		C-FET, FDC633N	C401	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A30-262-080		C-FET, FDC634P				
	89-332-654-080		CHIP TRANSISTOR, 2SC3265Y	C402	87-A10-770-080		C-CAP,V 0.1-10 K B
	87-A30-147-080		C-TR, 2SA1832GR	C403	87-A11-046-080		C-CAP,TN 100U-4 M F95 B
	87-A30-499-040		C-FET, 2SK2009	C404	87-A10-591-080		C-CAP,TN 47-6.3 M F95-BCASE
	87-A30-033-080		C-FET, 2SK2035	C405	87-A11-049-080		C-CAP,U 1-6.3 K B
				C406	87-A11-049-080		C-CAP,U 1-6.3 K B
DIODE							
	87-A40-124-080		C-DIODE, RB501V-40	C407	87-A10-902-080		C-CAP,U 0.47-10 K B
	87-A40-687-080		C-DIODE, M1FH3	C408	87-A10-765-080		C-CAP,V 0.033-10 K B
	87-017-850-080		C-DIODE, DAP222	C409	87-A10-765-080		C-CAP,V 0.033-10 K B
				C410	87-A10-556-080		C-CAP,V 2200P-50 K B
				C411	87-A10-556-080		C-CAP,V 2200P-50 K B
				C412	87-A10-556-080		C-CAP,V 2200P-50 K B
				C413	87-A10-556-080		C-CAP,V 2200P-50 K B
				C414	87-A10-556-080		C-CAP,V 2200P-50 K B
				C415	87-A10-770-080		C-CAP,V 0.1-10 K B
				C416	87-A11-751-080		C-CAP,TN 22U-4 M P
				C417	87-A11-807-080		C-CAP,TN 4.7U-6.3 M P
				C418	87-A11-058-080		C-CAP,U 0.22-10 K B
				C419	87-A11-058-080		C-CAP,U 0.22-10 K B
				C420	87-A11-058-080		C-CAP,U 0.22-10 K B
				C600	87-A11-806-080		C-CAP,TN 47U-6.3 M PSLB
MAIN C.B							
C100	87-A11-751-080		C-CAP,TN 22U-4 M P				
C102	87-A11-751-080		C-CAP,TN 22U-4 M P				
C103	87-A11-751-080		C-CAP,TN 22U-4 M P	C601	87-A10-557-080		C-CAP,V 3300P-25 K B
C104	87-A11-046-080		C-CAP,TN 100U-4 M F95 B	C602	87-A11-806-080		C-CAP,TN 47U-6.3 M PSLB
C106	87-A11-751-080		C-CAP,TN 22U-4 M P	C603	87-A10-770-080		C-CAP,V 0.1-10 K B
				C604	87-A10-770-080		C-CAP,V 0.1-10 K B
C107	87-A10-766-080		C-CAP,V 0.047-10 K B	C605	87-A10-554-080		C-CAP,V 1000P-50 K B
C108	87-A10-561-080		C-CAP,V 0.01U-16 K B				
C109	87-A10-671-080		C-CAP,V 0.022-16 K B	C606	87-A11-807-080		C-CAP,TN 4.7U-6.3 M P
C110	87-A11-058-080		C-CAP,U 0.22-10 K B	C607	87-A11-049-080		C-CAP,U 1-6.3 K B
C111	87-A10-558-080		C-CAP,V 4700P-25 K B	C608	87-A10-547-080		C-CAP,V 220P-25 J CH
				C609	87-A10-537-080		C-CAP,V 33P-50 J CH
				C610	87-A11-751-080		C-CAP,TN 22U-4 M P
C112	87-A11-049-080		C-CAP,U 1-6.3 K B				
C113	87-A10-558-080		C-CAP,V 4700P-25 K B	C611	87-A11-049-080		C-CAP,U 1-6.3 K B
C114	87-A11-049-080		C-CAP,U 1-6.3 K B	C614	87-012-286-080		C-CAP,U 0.01-25 KB
C115	87-016-448-080		C-CAP,TN 2.2-10 F95P	C701	87-A10-770-080		C-CAP,V 0.1-10 KB
C116	87-A10-543-080		C-CAP,V 100P-50 J CH	C702	87-A10-543-080		C-CAP,V 100P-50 J CH
				C703	87-A10-543-080		C-CAP,V 100P-50 J CH
C117	87-A10-561-080		C-CAP,V 0.01U-16 K B				
C118	87-A10-561-080		C-CAP,V 0.01U-16 K B	C704	87-A10-543-080		C-CAP,V 100P-50 J CH
C119	87-A10-671-080		C-CAP,V 0.022-16 K B	C705	87-A10-543-080		C-CAP,V 100P-50 J CH
C120	87-A10-559-080		C-CAP,V 6800P-25 K B	C706	87-A11-049-080		C-CAP,U 1-6.3 K B
C121	87-A10-766-080		C-CAP,V 0.047-10 K B	C707	87-016-449-080		C-CAP,TN 10-4 F95 P
				C708	87-016-449-080		C-CAP,TN 10-4 F95 P
C122	87-A10-561-080		C-CAP,V 0.01U-16 K B				
C123	87-A10-561-080		C-CAP,V 0.01U-16 K B	C709	87-A11-058-080		C-CAP,U 0.22-10 K B
C124	87-A10-554-080		C-CAP,V 1000P-50 K B	C710	87-A11-058-080		C-CAP,U 0.22-10 K B
C125	87-A10-554-080		C-CAP,V 1000P-50 K B	C711	87-A11-049-080		C-CAP,U 1-6.3 K B
C126	87-A10-554-080		C-CAP,V 1000P-50 K B	C712	87-A11-049-080		C-CAP,U 1-6.3 K B
				C713	87-A11-751-080		C-CAP,TN 22U-4 M P
C127	87-A10-554-080		C-CAP,V 1000P-50 K B				
C128	87-A10-554-080		C-CAP,V 1000P-50 K B	C715	87-A11-318-080		C-CAP,TN 220U-2.5 SVB2
C129	87-A10-554-080		C-CAP,V 1000P-50 K B	C716	87-A11-318-080		C-CAP,TN 220U-2.5 SVB2
C200	87-A11-751-080		C-CAP,TN 22U-4 M P	C717	87-A11-061-080		C-CAP,S 2.2-10 K B
C201	87-A10-770-080		C-CAP,V 0.1-10 K B	C720	87-A11-058-080		C-CAP,U 0.22-10 KB
				CN100	87-A61-315-080		C-CONN, 20P H XF2L-2035
C202	87-A10-770-080		C-CAP,V 0.1-10 K B				
C204	87-A10-902-080		C-CAP,U 0.47-10 K B	CN401	87-A61-316-080		C-CONN, 8P H XF2L-0835
C205	87-A10-770-080		C-CAP,V 0.1-10 K B	CN700	87-A61-317-080		C-CONN, 8P H XF2L-0825
C206	87-A10-550-080		C-CAP,V 470P-50 K B	D300	87-A40-556-080		C-LED, CL-270HR RED
C207	87-A10-902-080		C-CAP,U 0.47-10 K B	L100	87-005-910-080		C-COIL, S 22UH M LK2125
				L102	87-A50-359-080		C-COIL, 22UH K NLF252018
C208	87-A10-561-080		C-CAP,V 0.01U-16 K B				

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
L200	87-A50-646-080		C-COIL, 22UH K NLFC201614	R717	87-A91-878-080		C-F-BEAD, BK1608HS241
L400	87-A50-011-080		C-COIL, 47UH LQH3C	R718	87-A91-878-080		C-F-BEAD, BK1608HS241
L401	87-A50-537-080		C-COIL, 100UH C4-K3L	R719	87-A91-878-080		C-F-BEAD, BK1608HS241
L402	87-A50-475-080		C-COIL, 10UH K NLFC201614	S300	87-A91-436-080		C-SW, PUSH 2-1-1 SPVE3.8
L403	87-A50-475-080		C-COIL, 10UH K NLFC201614	S301	87-A90-703-080		C-SW, SL 1-1-3 SSSS813-B-2B
L404	87-A50-475-080		C-COIL, 10UH K NLFC201614	S302	87-A90-232-080		C-SW, TACT SKQRAA
L405	87-A50-475-080		C-COIL, 10UH K NLFC201614	S303	87-A90-232-080		C-SW, TACT SKQRAA
L406	87-005-910-080		C-COIL, S 22UH M LK2125	S304	87-A90-232-080		C-SW, TACT SKQRAA
L600	87-A50-325-080		C-COIL, 180UH C4-K3L	S305	87-A90-232-080		C-SW, TACT SKQRAA
L601	87-A50-012-080		C-COIL, 100UH LQH3C	S306	87-A90-232-080		C-SW, TACT SKQRAA
L701	87-005-769-080		C-COIL, S 100UH K	X200	87-A70-276-080		C-VIB, CER 22.57MHZ CSACW2257MX
PR600	87-A91-769-080		C-PROTECTOR, 0.75A ERY32SB075	X301	87-A70-277-080		C-VIB, CER 6.0MHZ CSTRC0600MG05
PR601	87-A91-769-080		C-PROTECTOR, 0.75A ERY32SB075				
R204	87-A91-879-080		C-F-BEAD, BK1608TS102				
R211	87-A91-880-080		C-F-BEAD, BLM10A601SG				
R314	87-A00-759-080		C-RES, V 27K-1/16W F				
R315	87-A00-756-080		C-RES, V 10K-1/16W F				
R320	87-A00-755-080		C-RES, V 6.8K-1/16W F				
R321	87-A00-757-080		C-RES, V 12K-1/16W F				
R322	87-A00-758-080		C-RES, V 22K-1/16W F				
R323	87-A00-760-080		C-RES, V 68K-1/16W F				
R618	87-A00-761-080		C-RES, V 510K-1/16W F				
R619	87-A00-762-080		C-RES, V 680K-1/16W F				
R701	87-A91-879-080		C-F-BEAD, BK1608TS102				
R702	87-A91-879-080		C-F-BEAD, BK1608TS102				

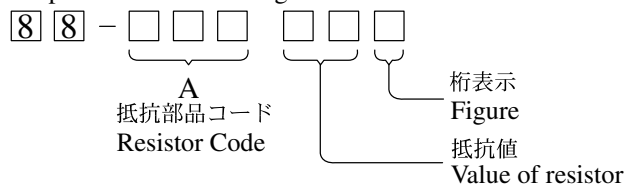
FLEX JACK C.B

	8A-HM5-602-010	PWB, FLEX JACK
J700	87-A60-682-010	JACK, 3.5 ST 7P

# ○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

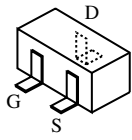
## Chip Resistor Part Coding



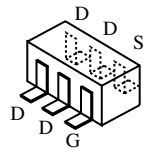
## チップ抵抗 Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

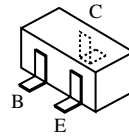
## TRANSISTOR ILLUSTRATION



2SK2009  
2SK2035



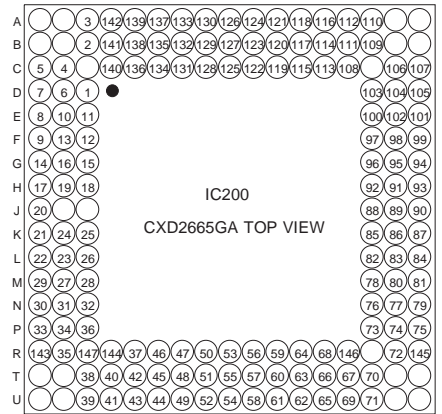
FDC633N  
FDC634P



2SA1588  
2SA1832  
2SC3265  
2SC4738  
DTA144EE

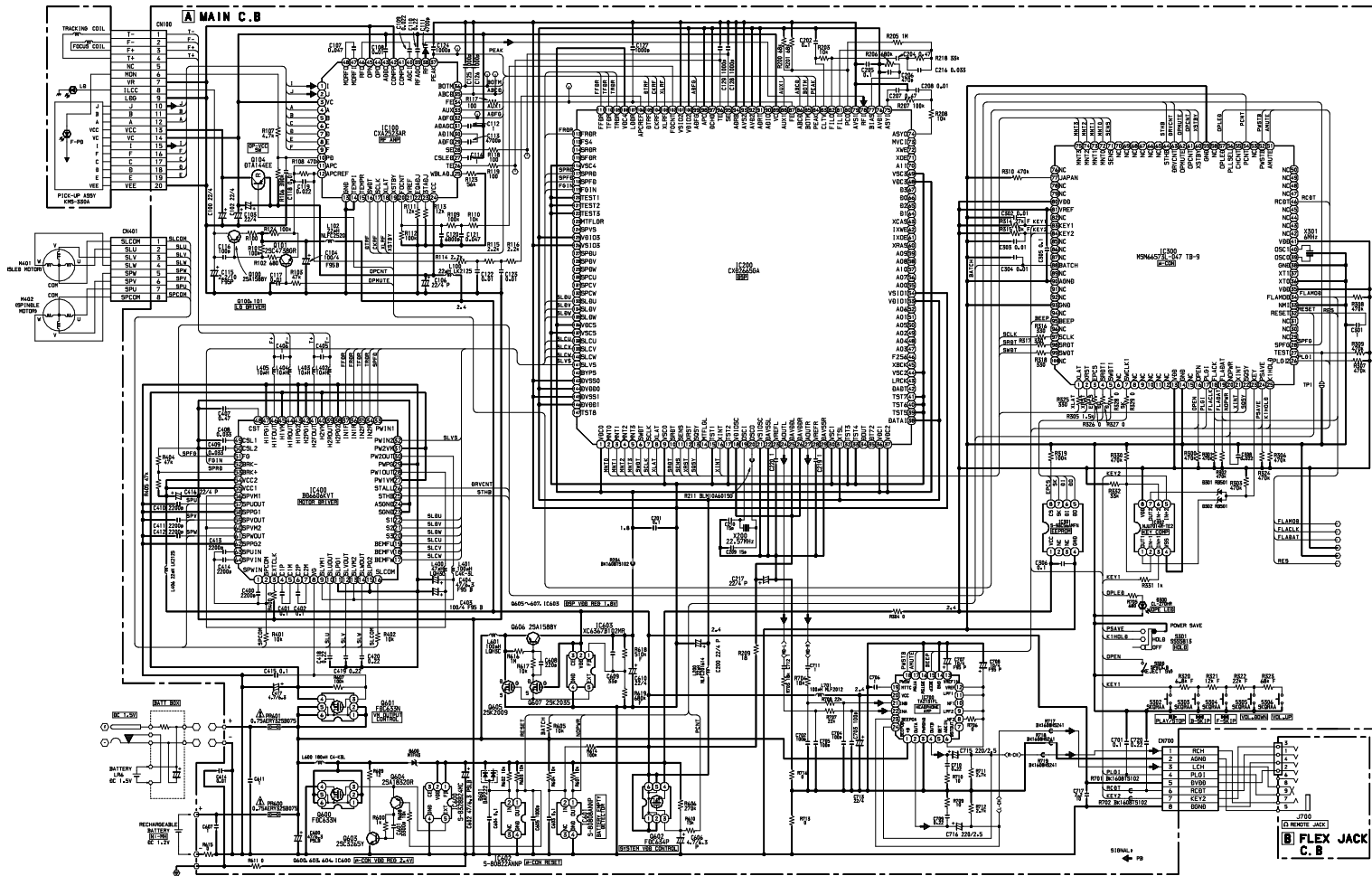


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

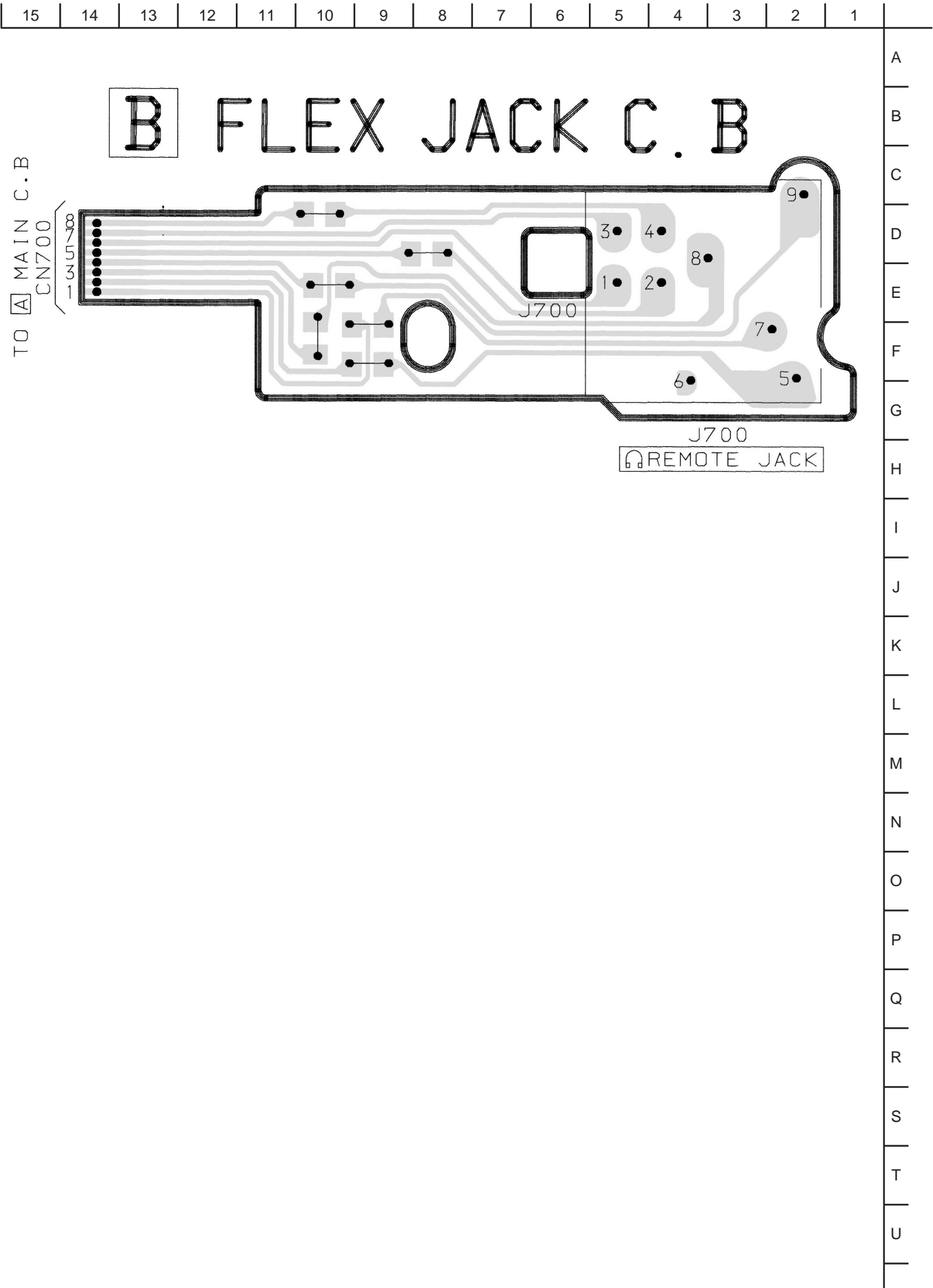




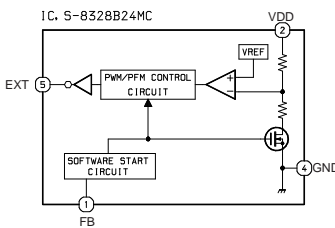
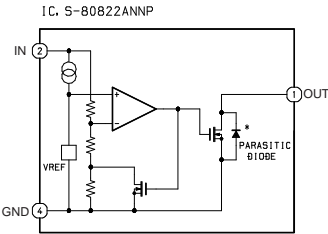
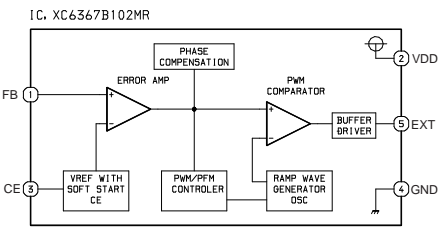
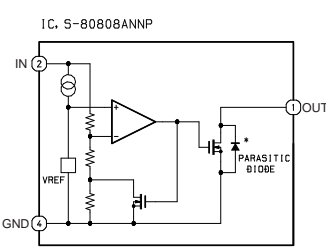
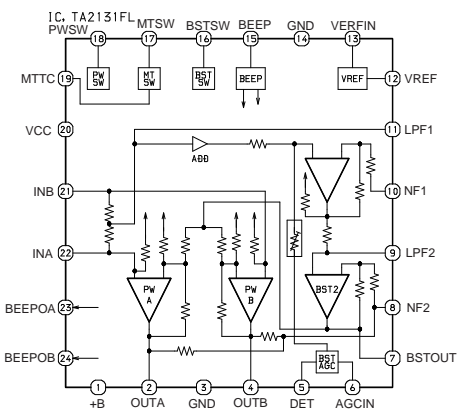
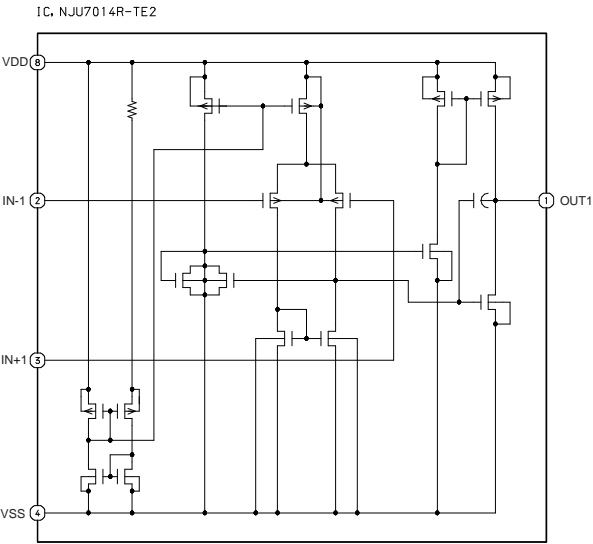
### SCHEMATIC DIAGRAM (MAIN / FLEX JACK)



WIRING – 2 (FLEX JACK)



IC BLOCK DIAGRAM



## IC DESCRIPTION

IC, CXD2665GA

Pin No.	Circuit Pin No.	Pin Name	I/O	Description
A-1	–	NC	–	Not connected.
A-2	–	NC	–	Not connected.
A-3	3	MNT1	O	Monitor output.
B-1	–	NC	–	Not connected.
B-2	–	NC	–	Not connected.
B-3	2	MNT0	I/O	Monitor input/output.
C-1	5	MNT3	O	Monitor output.
C-2	4	MNT2	O	Monitor output.
C-3	–	NC	–	Not connected.
D-1	7	SCLK	I	Microprocessor serial bus clock input.
D-2	6	SWDT	I	Microprocessor serial bus data writing input.
D-3	1	VDC0	–	VDD for internal logic (1.8V).
E-1	8	XLAT	I	Microprocessor serial bus latch input.
E-2	10	SRDT	O	Microprocessor serial bus data reading output.
E-3	11	SENS	O	Internal state output to the microprocessor serial bus address.
F-1	9	VSC0	–	GND for internal logic.
F-2	13	SQSY	O	ADIP synch output when PTGR (ADRS = \$3B, DATA1 - D7) = 0. DISC SUB-Q synch output when PTGR = 1.
F-3	12	XRST	I	Reset input. Reset with “L”.
G-1	14	MTFLGL	O	Lch zero data detection flag output (Not used).
G-2	16	XINT	O	Interruption status output. “L” at interruption status.
G-3	15	TST1	I	Test pin. Set to “L”.
H-1	17	TST2	I	Test pin. Set to “L”.
H-2	19	OSCI	I	X’tal oscillation circuit input (OSCI pin reverse output).
H-3	18	VDIOSC	–	VDD for OSC cell (2.4V).
J-1	20	OSCO	O	X’tal oscillation circuit output.
J-2	–	NC	–	Not connected.
J-3	–	NC	–	Not connected.
K-1	21	VSIOSC	–	GND for OSC cell.
K-2	24	AOUTL	O	Built-in DAC Lch output.
K-3	25	DAV <sub>DDL</sub>	–	VDD for built-in DAC (Lch 2.4V).
L-1	22	DAV <sub>SSL</sub>	–	GND for built-in DAC (Lch).
L-2	23	VREFL	O	Built-in DAC VREF (Lch). (Connect to GND via a capacitor of approximately 1μ F).
L-3	26	DAV <sub>DDR</sub>	–	VDD for built-in DAC (Rch 2.4V).
M-1	29	DAV <sub>SSR</sub>	–	GND for built-in DAC (Rch).
M-2	27	AOUTR	O	Internal DAC Rch output.
M-3	28	VREFR	O	Built-in DAC VREF (Rch) . (Connect to GND via a capacitor of approximately 1μ F).
N-1	30	VSC1	–	GND for internal logic.
N-2	31	XTSL	I	Swth input frequency of OSCI pin.(Connected to VDD)

Pin No.	Circuit Pin No.	Pin Name	I/O	Description
N-3	32	TST3	I	Test pin. Set to “L”.
P-1	33	TST4	I	Test pin. Set to “L”.
P-2	34	DOUT	O	Digital audio output (Not used).
P-3	36	VDC1	–	VDD for internal logic (1.8V).
U-1	–	NC	–	Not connected.
T-1	–	NC	–	Not connected.
R-1	143	DV <sub>ss0</sub>	–	GND for built-in 16Mbit DRAM.
U-2	–	NC	–	Not connected.
T-2	–	NC	–	Not connected.
R-2	35	DT72	–	Not connected.
U-3	39	TST5	I	Test pin. Set to “L”.
T-3	38	DATAI	I	Pin for external audio data input to internal DAC. (Connect to GND when not in use).
R-3	147	TST8	–	Not used.
U-4	41	TST7	I	Test pin. Set to “L”.
T-4	40	TST6	I	Test pin. Set to “L”.
R-4	144	DV <sub>DD0</sub>	–	VDD for built-in 16Mbit DRAM (2.4V).
U-5	43	LRCK	O	LR clock for external D/A converter (44.1kHz).
T-5	42	DADT	O	Data output to external D/A converter.
R-5	37	VDC2	–	VDD for internal logic (1.8V).
U-6	44	VSC2	–	GND for internal logic.
T-6	45	XBCK	O	Bit clock for external D/A converter (2.8224MHz) (Not used).
R-6	46	F256	O	11.2896MHz clock output (X’tal system) (Not used).
U-7	49	A02	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
T-7	48	A04	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-7	47	A03	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
U-8	52	A06	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
T-8	51	A01	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-8	50	A05	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
U-9	54	VSIO1	–	GND for I/O cell.
T-9	55	A00	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-9	53	VDIO1	–	VDD for I/O cell (2.4V).
U-10	58	A08	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).

Pin No.	Circuit Pin No.	Pin Name	I/O	Description
T-10	57	A10	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-10	56	A07	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
U-11	61	IXOE	O	Not used.
T-11	60	XRAS	O	RAS output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-11	59	A09	O	Address output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
U-12	62	IXWE	O	Not used.
T-12	63	XCAS	O	CAS output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-12	64	D1	I/O	Data input/output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
U-13	65	D2	I/O	Data input/output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
T-13	66	D0	I/O	Data input/output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-13	68	VDC3	–	VDD for 1.8V internal logic.
U-14	69	VSC3	–	VSS for 1.8V internal logic.
T-14	67	D3	I/O	Data input/output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-14	146	DV <sub>DD1</sub>	–	VDD for internal 16Mbit DRAM (2.4V).
U-17	–	NC	–	Not connected.
U-16	–	NC	–	Not connected.
U-15	71	XOE	O	Output-enabling output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
T-17	–	NC	–	Not connected.
T-16	–	NC	–	Not connected.
T-15	70	A11	O	Not used.
R-17	145	DV <sub>SS1</sub>	–	GND for built-in 16Mbit DRAM.
R-16	72	XWE	O	Write-enabling output for external DRAM (Not used). (Make sure to leave the pin open when external DRAM is not in use).
R-15	–	NC	–	Not connected.
P-17	75	ASYI	I	Playback EFM comparator slice level input.
P-16	74	ASYO	O	Playback EFM binary signal output.
P-15	73	MVCI	I	Clock input from external VCO (Not used).
N-17	79	AVS1	–	Analog GND.
N-16	77	BIAS	I	Playback EFM comparator bias current input.
N-15	76	AVD1	–	Analog power supply (2.4V).
M-17	81	FILI	I	Filter input for playback EFM master PLL.



Pin No.	Circuit Pin No.	Pin Name	I/O	Description
M-16	80	PCO	O	Phase comparison output for playback EFM master PLL.
M-15	78	RFI	I	Playback EFM RF signal input.
L-17	84	PEAK	I	Laser power signal peak hold input (from CXA2523AR).
L-16	83	CLTV	I	Internal VCO control voltage input for playback EFM master PLL.
L-15	82	FILO	O	Filter output for playback EFM master PLL.
K-17	87	FE	I	Focus error signal input (from CXA2523AR).
K-16	86	ABCD	I	Laser power signal input (from CXA2523AR).
K-15	85	BOTM	I	Laser power signal bottom-hold input (from CXA2523AR).
J-17	90	ADIO	O	Not used.
J-16	89	VC	I	Midpoint voltage input (from CXA2523AR).
J-15	88	AUX1	I	Auxiliary A/D input. (Connect to analog power supply when not in use).
H-17	93	AVS2	–	Analog GND.
H-16	91	ADRT	I	Output voltage for the upper limit of A/D converter operation.
H-15	92	AVD2	–	Analog power supply (2.4V).
G-17	94	ADRB	I	Output voltage for the lower limit of A/D converter operation.
G-16	95	SE	I	Sled error input (from CXA2523AR).
G-15	96	TE	I	Tracking error input (from CXA2523AR).
F-17	99	ADFG	I	ADIP binary FM signal input (22.05+-1kHz) (from CXA2523AR).
F-16	98	APC	I	Error input signal for laser digital APC (Auto Power Control) (from CXS2523AR). (Connect to analog power supply when not in use).
F-15	97	DCHG	I	Connect to low impedance analog power supply.
E-17	101	VSIO2	–	VSS for I/O cell.
E-16	102	F0CNT	O	Control output for CXA2523AR filter cutoff.
E15	100	VDIO2	–	VDD for I/O cell (2.4V).
D-17	105	DTRF	O	Data output for CXA2523AR control.
D-16	104	CKRF	O	Clock output for CXA2523AR control.
D-15	103	XLRF	O	Latch output for CXA2523AR control.
A-17	–	NC	–	Not connected.
B-17	–	NC	–	Not connected.
C-17	107	LDDR	O	PWM output for laser digital APC.
A-16	–	NC	–	Not connected.
B-16	–	NC	–	Not connected.
C-16	106	APCREF	O	Reference PWM output for laser APC.
A-15	110	TFDR	O	Tracking servo drive PWM output (+).
B-15	109	TRDR	O	Tracking servo drive PWM output (–).
C-15	–	NC	–	Not connected.
A-14	112	FRDR	O	Focus servo drive PWM output (–).
B-14	111	FFDR	O	Focus servo drive PWM output (+).
C-14	108	VDC4	–	VDD for internal logic (1.8V).
A-13	116	VSC4	–	GND for internal logic.

Pin No.	Circuit Pin No.	Pin Name	I/O	Description
B-13	114	SRDR	O	Sled servo drive PWM output (–) (Not used).
C-13	113	FS4	O	176.4kHz clock output (X’tal system) (Not used).
A-12	118	SPFD	O	Spindle servo drive output (PWM+ or absolute PWM value).
B-12	117	SPRD	O	Spindle servo drive output (PWM– or polarity).
C-12	115	SFDR	O	Sled servo drive PWM output (+) (Not used).
A-11	121	TEST2	I	Test input. Connect to GND.
B-11	120	TEST1	I	Test input. Connect to GND.
C-11	119	FGIN	I	FG input for Spindle CAV servo.
A-10	124	SPVS	O	Brushless spindle motor absolute value PWM output (Not used). (Open when not in use).
B-10	123	MGFLGR	O	Rch zero data detection flag output (Not used).
C-10	122	TEST3	I	Test input. Connect to GND.
A-9	126	VSIO3	–	VSS for I/O cell.
B-9	127	SPDU	O	Brushless spindle motor 3-phase drive logic output (U) (Not used). (Open when not in use).
C-9	125	VDIO3	–	VDD for I/O cell (2.4V).
A-8	130	SPCU	I	Brushless spindle motor drive comparison input (U) (Not used). (Open when not in use).
B-8	129	SPDW	O	Brushless spindle motor 3-phase drive logic output (W) (Not used). (Open when not in use).
C-8	128	SPDV	O	Brushless spindle motor 3-phase drive logic output (V) (Not used). (Open when not in use).
A-7	133	SLDU	O	Brushless sled motor 3-phase drive logic output (U) / 2-phase drive logic output (1+). (Open when not in use).
B-7	132	SPCW	I	Brushless spindle motor drive comparison input (W) (Not used). (Connect to GND when not in use).
C-7	131	SPCV	I	Brushless spindle motor drive comparison input (V) (Not used). (Connect to GND when not in use).
A-6	137	VSC5	–	GND for internal logic.
B-6	135	SLDW	O	Brushless sled motor 3-phase drive logic output (W) / 2-phase drive logic output (2+). (Open when not in use).
C-6	134	SLDV	O	Brushless sled motor 3-phase drive logic output (V) / 2-phase drive logic output (1–). (Open when not in use).
A-5	139	SLCV	I	Brushless sled motor 3-phase drive comparison input (V) / 2-phase drive comparison input (2). (Connect to GND when not in use).
B-5	138	SLCU	I	Brushless sled motor 3-phase drive comparison input (U) / 2-phase drive comparison input (1). (Connect to GND when not in use).
C-5	136	VDC5	–	VDD for internal logic (1.8V).
A-4	142	BYPS	O	Brushless sled motor auxiliary output (Not used). (Open when not in use).

Pin No.	Circuit Pin No.	Pin Name	I/O	Description
B-4	141	SLVS	O	Brushless sled motor absolute value PWM output. (Open when not in use).
C-4	140	SLCW	I/O	Brushless sled motor 3-phase drive comparison input (W) / Sled 2-phase drive logic output (2-). (Connect to GND when not in use).

Pin No.	Pin Name	I/O	Description
1	XLAT	O	Latch output to CXD2665GA.
2	XRST	O	Reset output to CXD2665GA.
3	EPCS	O	Chip select output to EEPROM.
4	SRDT1	I	Serial data input to EEPROM.
5	SWDT1	O	Serial data output to EEPROM.
6	NC	–	Not connected.
7	SWCLK1	O	Serial clock output to EEPROM.
8	NC	–	Not connected.
9	NC	–	Not connected.
10	NC	–	Not connected.
11	NC	–	Not connected.
12	NC	–	Not connected.
13	VDD	–	Power supply pin.
14	GND	–	GND pin.
15	NC	–	Not connected.
16	OPEN	I	Backholder detection SW input. “H” for open.
17	PLGI	I	HP plug detection SW input. “L” during HP plug insertion.
18	FLACLK	I	Serial clock input for flash memory overwriting.
19	FLADAT	I/O	Serial data output for flash memory overwriting.
20	NOPWR	I	Reduced voltage detection input. “L” for reduced voltage.
21	XINT	I	Interruption input from CXD2665GA.
22	SQSY	I	SUBQ/ADIP synch input.
23	KEY	I	Key input detection input. “L” for key input.
24	PSAVE	I	Power-save mode detection SW input. “L” for power-save.
25	K1HOLD	I	Main unit HOLD detection SW input. “L” for HOLD.
26	PLGI2	I	HP plug detection input. “L” during HP plug insertion.
27	TEST	I	Normal/TEST mode toggle input. “L” for TEST mode.
28	SPFG	I	Spindle FG input.
29	NC	–	Not connected.
30	NC	–	Not connected.
31	NC	–	Not connected.
32	RESET	I	Reset input pin. “L” for rest.
33	NMI	I	Not used. (Fixed at “L”)
34	FLAMOD	I	High voltage input for setting the serial mode for overwriting the flash memory.
35	VDD	–	Power supply pin.
36	XT0	–	Not used. (Fixed at “L”)
37	XT1	–	Not used.
38	GND	–	GND pin.
39	OSC0	–	Main clock oscillation input pin.
40	OSC1	–	Main clock oscillation output pin.
41	VDD	–	Power supply pin.

Pin No.	Pin Name	I/O	Description
42	NC	–	Not connected.
43	NC	–	Not connected.
44	NC	–	Not connected.
45	NC	–	Not connected.
46	RCDT	O	Remote control data output.
47	NC	–	Not connected.
48	NC	–	Not connected.
49	NC	–	Not connected.
50	NC	–	Not connected.
51	AMUTE	O	Line mute control output. “H” for mute.
52	PWSTB	O	TA2131FL power ON/OFF control output. “H” for power ON.
53	NC	–	Not connected.
54	PCNT	O	Power supply ON/OFF control output. “H” for power supply ON.
55	CHCNT	–	Not used.
56	PLLSEL	–	Not used.
57	OPLD	O	Operation LED ON/OFF control output. “H” for ON.
58	NC	–	Not connected.
59	GND	–	GND terminal.
60	XSTBY	O	CXA2523AR standby output. “L” for standby.
61	OPCNT	O	OP power supply control output. “L” for power supply ON.
62	OPMUTE	O	OP mute control output. “L” for mute.
63	DRVCNT	O	BD6606KVT standby output. “L” for standby.
64	STHB	O	Biaxial mute output. “L” for mute.
65	NC	–	Not connected.
66	NC	–	Not connected.
67	NC	–	Not connected.
68	NC	–	Not connected.
69	NC	–	Not connected.
70	NC	–	Not connected.
71	SENS	I	SENS pin signal input from CXD2665GA.
72	MNT0	I	MNT0 pin signal input from CXD2665GA.
73	MNT1	I	MNT1 pin signal input from CXD2665GA.
74	MNT2	I	MNT2 pin signal input from CXD2665GA.
75	MNT3	I	MNT3 pin signal input from CXD2665GA.
76	NC	–	Not connected.
77	JAPAN	I	Pin set by destination. “H” for D versions.
78	NC	–	Not connected.
79	NC	–	Not connected.
80	VDD	–	Power supply pin.
81	VREF	–	Analog reference voltage pin. Connect to VDD.
82	NC	–	Not connected.

Pin No.	Pin Name	I/O	Description
83	KEY1	I	Main unit KEY input.
84	KEY2	I	Remote control KEY input.
85	NC	–	Not connected.
86	NC	–	Not connected.
87	NC	–	Not connected.
88	BATCH	I	Supplied voltage monitor input.
89	NC	–	Not connected.
90	AGND	–	Analog GND pin.
91	NC	–	Not connected.
92	NC	–	Not connected.
93	GND	–	GND pin.
94	NC	–	Not connected.
95	BEEP	O	Rectangular beep wave detection pin.
96	NC	–	Not connected.
97	SCLK	O	Serial clock output to CXD2665GA.
98	SRDT	I	Serial data input from CXD2665GA.
99	SWDT	O	Serial data output to CXD2665GA.
100	NC	–	Not connected.

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Pin No.	Pin Name	I/O	Description
1	SPWIN	I	SPIN detection comparator input (Phase W).
2	SPCOM	I	SPIN motor coil mid-point input terminal.
3	EXTCLK	I	Synchronized clock input terminal.
4	C1P	–	CHARGE PUMP capacitor 1 connect terminal +.
5	C1M	–	CHARGE PUMP capacitor 1 connect terminal -.
6	C2P	–	CHARGE PUMP capacitor 2 connect terminal +.
7	C2M	–	CHARGE PUMP capacitor 2 connect terminal -.
8	VG	O	CHARGE PUMP output.
9	SLVM1	–	Stepping power part power supply 1.
10	SLUOUT	O	Stepping motor output (Phase U).
11	SLPG1	–	Stepping power part GND 1.
12	SLVOUT	O	Stepping motor output (Phase V).
13	SLVM2	–	Stepping power part power supply 2.
14	SLWOUT	O	Stepping motor output (Phase W).
15	SLPG2	–	Stepping power part GND 2.
16	SLCOM	I	STEP motor coil mid-point input terminal.
17	BEMFW	O	STEP detection comparator output (Phase W).
18	BEMFV	O	STEP detection comparator output (Phase V).
19	BEMFU	O	STEP detection comparator output (Phase U).
20	S3	I	Stepping decoder input 3.
21	S2	I	Stepping decoder input 2.
22	S1	I	Stepping decoder input 1.
23	SGND	–	Small signal part GND (MOS).
24	ASGND	–	Small signal part GND (Bip.).
25	STHB	O	H1 and H2 bridge mute terminal.
26	STALL	I	Standby terminal.
27	PW1VM	–	Half bridge 1 power part power supply.
28	PW1OUT	O	Half bridge 1 output.
29	PWPG	–	Half bridge power part GND.
30	PW2VOUT	–	Half bridge 2 output.
31	PW2VM	–	Half bridge 2 power part power supply.
32	PWIN2	I	Half bridge 2 input.
33	PWIN1	I	Half bridge 1 input.
34	IN2R	I	H bridge 2 reverse input.
35	IN2F	I	H bridge 2 forward input
36	IN1R	I	H bridge 1 reverse input.
37	IN1F	I	H bridge 1 forward input.
38	H2PG2	–	H bridge 2 power part GND2.
39	H2ROUT	O	H bridge 2 reverse output.
40	H2VM	–	H bridge 2 power part power supply.
41	H2FOUT	O	H bridge 2 forward output.
42	H2PG1	–	H bridge 2 power part GND1.

Pin No.	Pin Name	I/O	Description
43	H1PG2	–	H bridge 1 power part GND2.
44	H1ROUT	O	H bridge 1 reverse output.
45	H1VM	–	H bridge 1 power part power supply.
46	H1FOUT	O	H bridge 1 forward output.
47	H1PG1	–	H bridge 1 power part GND1.
48	CST	–	Start oscillation capacitor connection terminal.
49	CSL1	–	Slope capacitor connection terminal 1.
50	CSL2	–	Slope capacitor connection terminal 2.
51	FG	O	FG output.
52	BRK-	I	Break comparator input (–).
53	BRK+	I	Break comparator input (+).
54	VCC2	–	Small signal part power supply terminal 2(Bip.).
55	VCC1	–	Small signal part power supply terminal 1(MOS).
56	SPVM1	–	Spindle power part power supply 1.
57	SPUOUT	O	Spindle motor output (Phase U).
58	SPPG1	–	Spindle power part GND 1.
59	SPVOUT	O	Spindle motor output (Phase V).
60	SPVM2	–	Spindle power part power supply 2.
61	SPWOUT	O	Spindle motor output (Phase W).
62	SPPG2	–	Spindle power part GND 2.
63	SPUIN	I	SPIN detection comparator input (Phase U).
64	SPVIN	I	SPIN detection comparator input (Phase V).



IC, CXA2523AR

Pin No.	Pin Name	I/O	Description
1	I	I	Input "I" RF signal converted to I-V.
2	J	I	Input "J" RF signal converted to I-V.
3	VC	O	Output voltage for VCC/2.
4	A	I	Input current for main beam servo signal A.
5	B	I	Input current for main beam servo signal B.
6	C	I	Input current for main beam servo signal C.
7	D	I	Input current for main beam servo signal D.
8	E	I	Input current for side beam servo signal E.
9	F	I	Input current for side beam servo signal F.
10	PD	I	Input beam spectrum monitor signal.
11	APC	O	Output laser APC.
12	APCREF	I	Input reference voltage for laser power setting.
13	GND	–	GND.
14	TEMPI	I	Temperature sensor connection pin. (Connected to GND)
15	TEMPR	I	Temperature sensor connection pin. Output reference voltage. (Not used)
16	SWDT	I	Input micro-processor serial interface data.
17	SCLK	I	Input micro-processor serial interface shift clock.
18	XLAT	I	Input micro-processor serial interface latch. "L": Latch.
19	XSTBY	I	Standby setting pin. "H": Normal mode, "L": Standby.
20	FOCNT	I	Internal current setting pin.
21	VREF	O	Output reference voltage. (Not used)
22	EQADJ	I/O	EQ central frequency setting pin.
23	3TADJ	I/O	BPF3T central frequency setting pin.
24	VCC	–	Power supply pin.
25	WBLADJ	I/O	BPF22 central frequency setting pin.
26	TE	O	Output tracking error signal.
27	CSLED	–	LPF capacitor connection pin for SLED error signal.
28	SE	O	Output SLED error signal.
29	ADFG	O	Output ADIP FM signal.
30	ADIN	I	Input ADIP signal comparator.
31	ADAGC	–	ADIPAGC capacitor connection pin.
32	ADFG	O	Output ADIP2 binary data signal.
33	AUX	O	13 output / Output temperature signal. Switched by serial command.
34	FE	O	Output focus error signal.
35	ABCD	O	Output beam spectrum signal for main beam servo detector.
36	BOTM	O	Output bottom hold signal for RF/ABCD.
37	PEAK	O	Output peak hold signal for RF/ABCD.
38	RF	O	RF equalizer output pin.
39	RF AGC	–	RFAGC capacitor connection pin.
40	AGCI	I	RFAGC input pin.
41	COMPO	O	User comparator output pin. (Not used)
42	COMPP	I	User comparator non-inverted input pin. (Connected to GND)

Pin No.	Pin Name	I/O	Description
43	ADDC	I/O	Capacitor connection pin for ADIP amplifier on return circuit.
44	OPO	O	Output pin for user operational amplifier. (Not used)
45	OPN	I	Non-inverted input pin for user operational amplifier. (Connected to GND)
46	RFO	O	RF amplifier output pin. Check point for eye pattern.
47	MORFI	I	Input pin where Groove RF signal is AC coupled.
48	MORFO	O	Output pin for Groove RF signal.

## MD TEST MODE

### Test Mode and Adjustment Mode

There are two test modes: operation check mode and adjustment mode.

All indications of each mode are performed by using the LCD of the remote control. To move between each operation, use the keys of the unit and the remote control.

\* Only HOLD of the remote control works during test mode.

#### Test Mode

##### Precautions for handling the disks

In the test mode and adjustment mode, disks are identified by the "HOLD" switch on the unit.

When inserting a disk into the unit, check the "HOLD" switch on the unit.

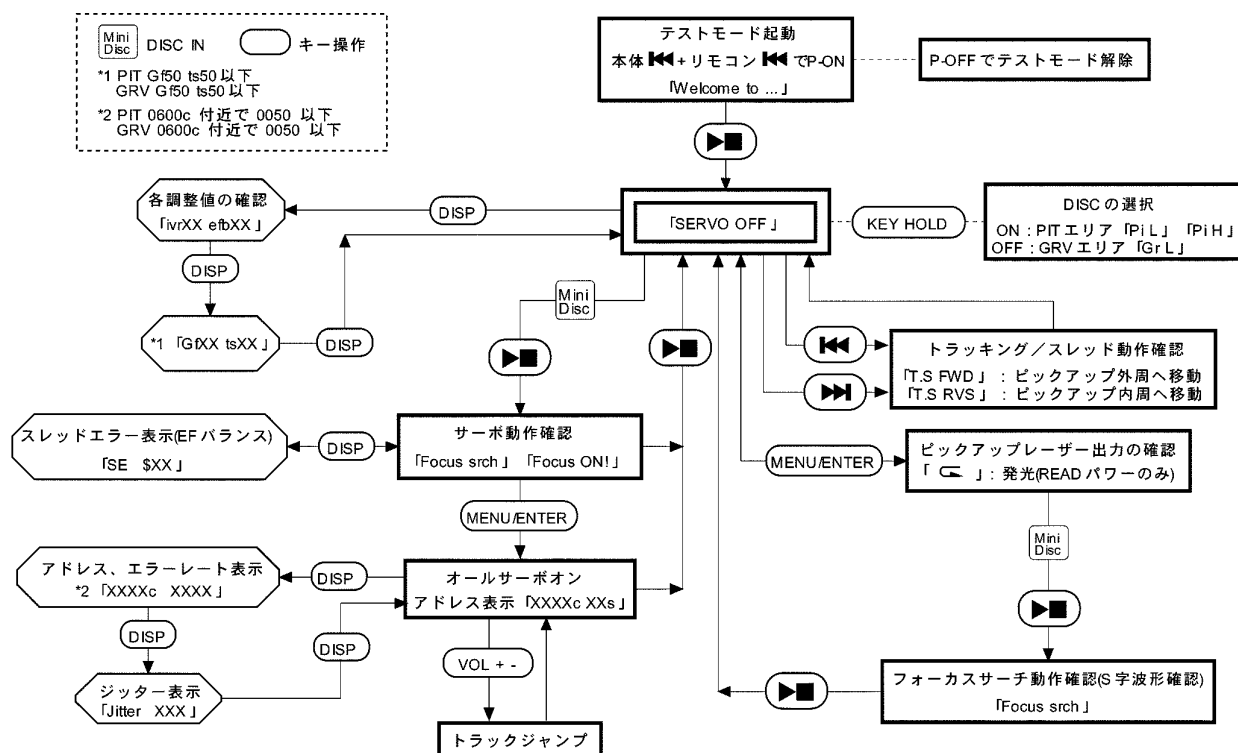
Turning on "HOLD" on the unit: Innermost circumference of the MO disk and the PIT disk (TEST DISC TGYS-1, etc.).



Turning off "HOLD" on the unit: MO disk groove area (MDW-74 disk on which a signal has already been recorded from the beginning to the end)



#### Outline of the Test Mode



## 1. Starting up and Terminating the Test Mode

### 1) Starting up the Test Mode

When the test mode starts up, all indicators on the LCD light and [Welcome to ...] is displayed.

- While pressing the "B-SKIP" key on the unit and "B-SKIP" key on the remote control, turn on the power.
- Short TP1 on the main board and turn on the power.  
For more information about TP1, refer to the adjustment section.



Remote control LCD display

### 2) Terminating the test mode

Remove the battery and turn off the power. When TP1 is shorted, be sure to open the connection between TP1 and GND to quit the test mode.

#### Notes

- Abnormalities of the mechanism are ignored during test mode. If any abnormality is detected, disconnect the AC plug immediately.
- Playback is not possible during test mode.

## 2. Checking the Remote Control LCD Display

When the test mode starts up, all the indicators of the LCD on the remote control light.

## 3. Checking the Audio System Output

The audio circuit (DAC, HP AMP) of the playback system can be checked.

Signals of 1 kHz, -37.2 dB (during 10 kΩ output load) are output from PHONE OUT.

## 4. Checking Operations of Each Switch

The ON/OFF state of the switches (contact state of the switches) on the machine and inside the mechanism can be checked on the LCD of the remote control.

When all the indicators of the LCD on the remote control light, press the "STOP" key to display [SERVO OFF].

### 1) When "HOLD" on the unit is on, the alarm mark appears.

When the machine is in POWER SAVE, [-] appears.

\* The "HOLD" switch on the remote control is not displayed.

### 2) When the cassette lid is closed (the OPEN/CLOSE switch is turned on), [~] appears.



HOLD

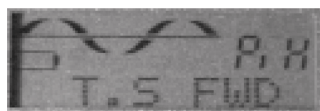


POWER SAVE

## 5. Checking the Sled Operation

The sled operation of the pickup can be checked in the [SERVO OFF] state.

- Press the "F-SKIP" key to move the pickup to the outer circumference. [T.S FWD] appears.
- Press the "B-SKIP" key to move the pickup to the inner circumference. [T.S RVS] appears.



The pickup moves to the outer circumference

The pickup moves to the inner circumference

## 6. Checking the Laser Output

Press the "MENU/ENTER" key in the [SERVO OFF] state to emit the laser of the pickup.

When the laser is emitted, [L] appears.

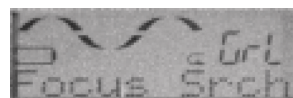


The LD emits the laser beam

## 7. Checking the Servo Operation

### 1) Checking the focus search and spindle kick

- Press the "PLAY/STOP" key without a disk inserted to check the focus search and kick of the spindle motor visually.  
[Focus Srch] appears.



Focus search

- Insert a disk and press the "MENU/ENTER" key then the "PLAY/STOP" key in order. The focus is not locked ([Focus ON!]) does not appear) and the S-curve can then be checked.

### 2) Focus servo ON

Insert a disk and press the "PLAY" key to lock the focus.  
[Focus ON!] appears.



Focus ON

### 3) All servo ON

Press the "MENU/ENTER" key in the [Focus servo ON] state to turn on the tracking and sled servo and lock the spindle servo. The address of the disk is displayed on the LCD of the remote control.

\*\*\*c: Cluster  
\*\*s: Selector



All servo ON  
(Address display)

### 4) Track jump operation

After all servo ON, use the "VOL.UP" and "VOL.DOWN" keys to perform the track jump operation.

- The track jumps in the FWD direction when the "VOL.UP" key is pressed.
- The track jumps in the RVS direction when the "VOL.DOWN" key is pressed.

## 8. Checking the Adjustment Value and Error Rate

Press the "DISP" key during each operation to display the following values on the LCD.

### 1) Checking the adjustment value

Press the "DISP" key in the [SERVO OFF] state and check the IVR value, EF balance value, focus gain, and tracking and sled gain.

SERVO OFF

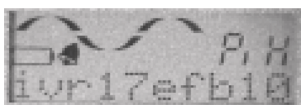
↓  
ivr \*\* efb \*\*

↓  
Gf \*\* ts \*\*

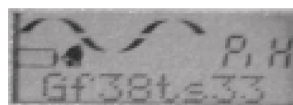
← The adjustment value is switched every time the "DISP" key is pressed.

IVR value and EF balance value

Focus gain, tracking gain and sled gain values



IVR value and EF balance value



Focus gain, tracking gain and sled gain values

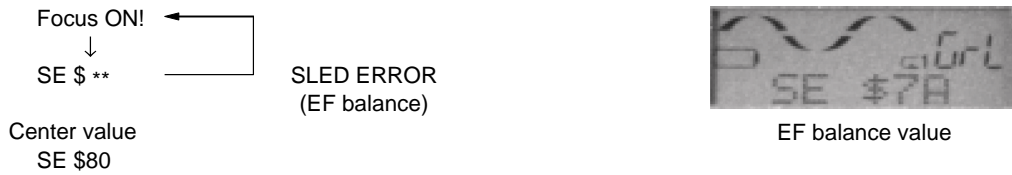
### • Reference value

Turn on the "HOLD" switch. [Pi H] appears.  
Gf: 50 or less ts: 50 or less

Turn on the "KEY HOLD" switch. [Gr L] appears.  
Gf: 50 or less ts: 50 or less

2) Checking the EF balance value

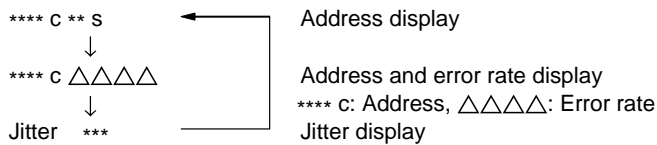
Press the "DISP" key in the [Focus ON!] state, and check the EF balance DC offset value.



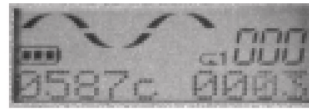
3) Checking the error rate

Press the "DISP" key in the [All servo ON] state to display the error rate.

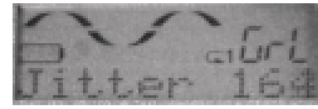
The error rate of the recorded disk provides a guideline as to whether the recording state of the disk is good or bad.



Address display



Address and error rate display



Jitter display

a. Checking the error rate using the PIT disk (TGYS-1)

1. Turn on the "KEY HOLD" switch. [Pi H] appears.
2. Move the pickup to the position right outside the innermost circumference.
3. Press the keys in order of "PLAY" → "MODE" to set [All servo ON] and change the address to near 600c 00s.
4. Press the "DISP" key to confirm that the error rate is [0050] or less.

b. Checking the error rate using the MO disk (MDW-74)

1. Turn off the "KEY HOLD" switch. [Gr L] appears.
2. Set [All servo ON] and change the address to near 600c 00s.
3. Confirm that the error rate is [0050] or less.

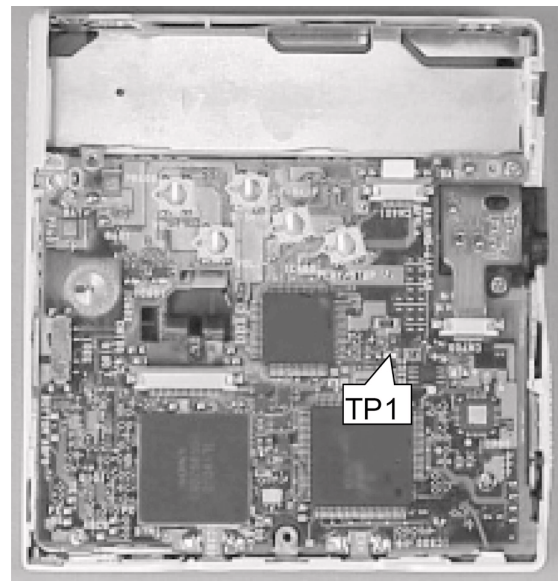
## ADJUSTMENT

### 1. Starting up and Terminating the Adjustment Mode

- 1) Starting up the adjustment mode  
Short TP1 on the main board, then turn on the power (insert a battery) while pressing the "PLAY/STOP" key.  
After the adjustment mode starts up, all the indicators on the LCD light and [ADJ MODE] appears.
- 2) Terminating the adjustment mode  
Remove the battery and turn off the power.

#### Note

- Be sure to use a clean disk because adjustment may be impossible if the disk is dirty or scratched.
- Perform each adjustment with the cassette lid of the unit facing upward.
- If the adjustment is not completed, [NO ADJUST!] appears during normal operations and the unit does not run.



Main board

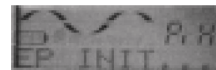
### 2. Adjustment procedure

This mode automatically adjusts the servo system and stores the adjustment data in EEPROM.

After replacing the pickup, microprocessor or EEPROM or repairing the mechanism, perform all the adjustment procedures.

#### 1) Initializing the EEPROM

When [ADJ MODE] appears, press the "VOL -" key.  
After [COMPLETE] appears, press the "PLAY/STOP" key.



During initializing



Completed

#### 2) Adjustment by the PIT disk (TGYS-1 test disk)

1. Use the "B-SKIP" and "F-SKIP" keys to move the pickup to almost the central position of the operable range of the sled.
2. Insert the TGYS-1 and press the "PLAY" key.
3. [ADJUST!] appears on the LCD and the automatic adjustment starts.
4. The [COMPLETE] indication means that the adjustment is completed.  
The [SERVO OFF] indication means the adjustment is not completed.
5. Press the "PLAY/STOP" key, then press the "DISP" key twice.  
Confirm that each \*\* of [Gf\*\*ts\*\*] is 50 or less.



During automatic adjustment



Automatic adjustment completed



Adjustment value check

#### 3) Adjustment by the MO disk (MDW-74)

1. Insert the MDW-74 and press the "PLAY" key.
2. [ADJUST!] appears on the LCD and the automatic adjustment starts.
3. The [COMPLETE] indication means that the adjustment is completed.  
The [SERVO OFF] indication means the adjustment is not completed.
4. Press the "PLAY/STOP" key, then press the "DISP" key twice.  
Confirm that each \*\* of "Gf\*\*ts\*\*" is 50 or less.

#### 4) Error rate check

1. Insert the MDW-74 disk on which a signal has already been recorded from the beginning to the end (disk recorded by 7ZG-9, AZG-4).
2. Press the "DTP" key to display [ERROR RATE] and start playback.
3. The error rate display starts at 600c00s.
4. Confirm that [0600C XXXX] appears and XXXX is 0050 or less.
5. Remove the MDW-74 and insert the TGYS-1.
6. Press the "DTP" key to display the [ERROR RATE] and start playback.
7. The error rate display starts at 600c00s.
8. Confirm that [0600C XXXX] appears and XXXX is 0050 or less.

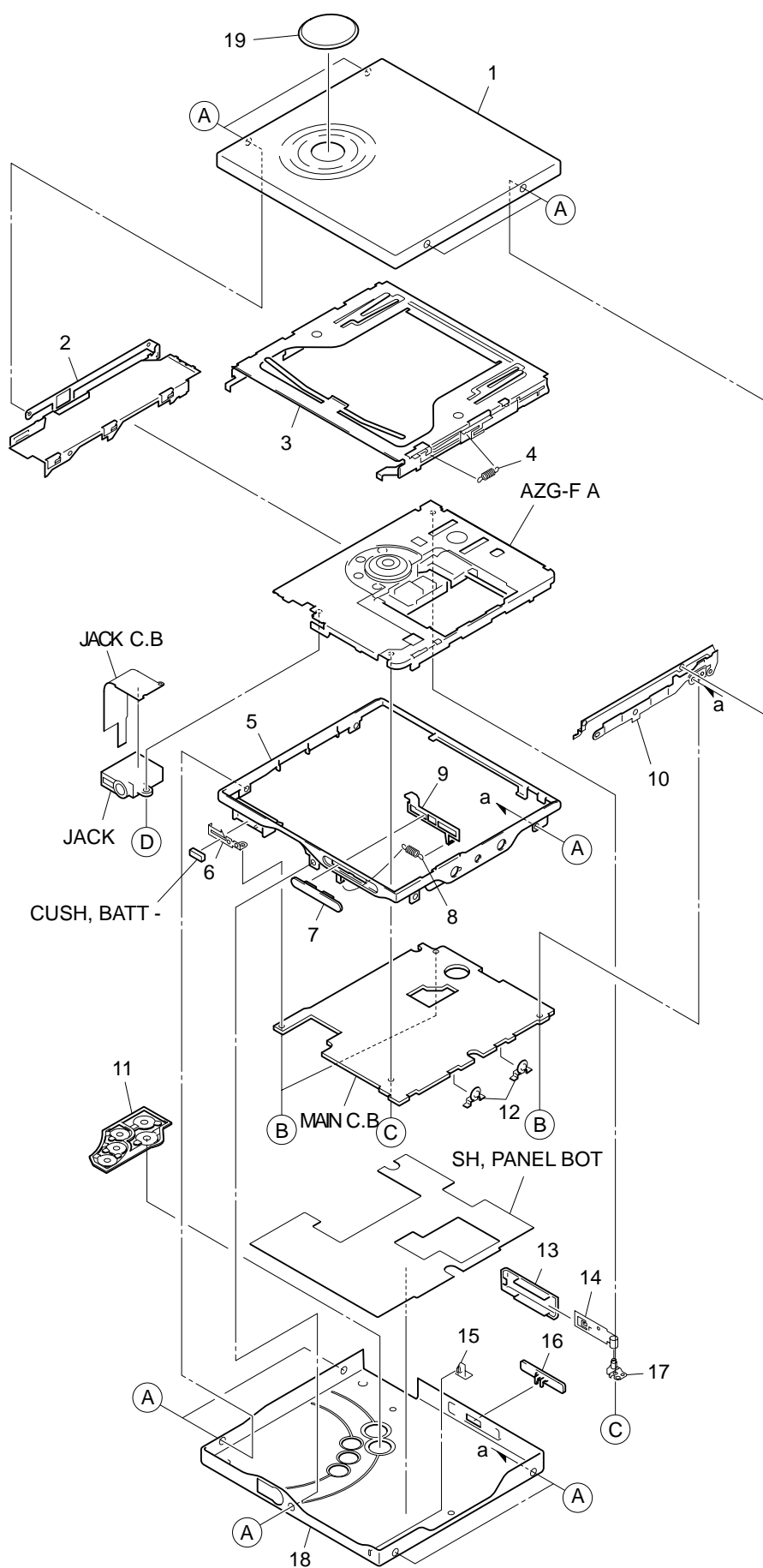


Operation start



Error rate display

# MECHANICAL EXPLODED VIEW 1 / 1





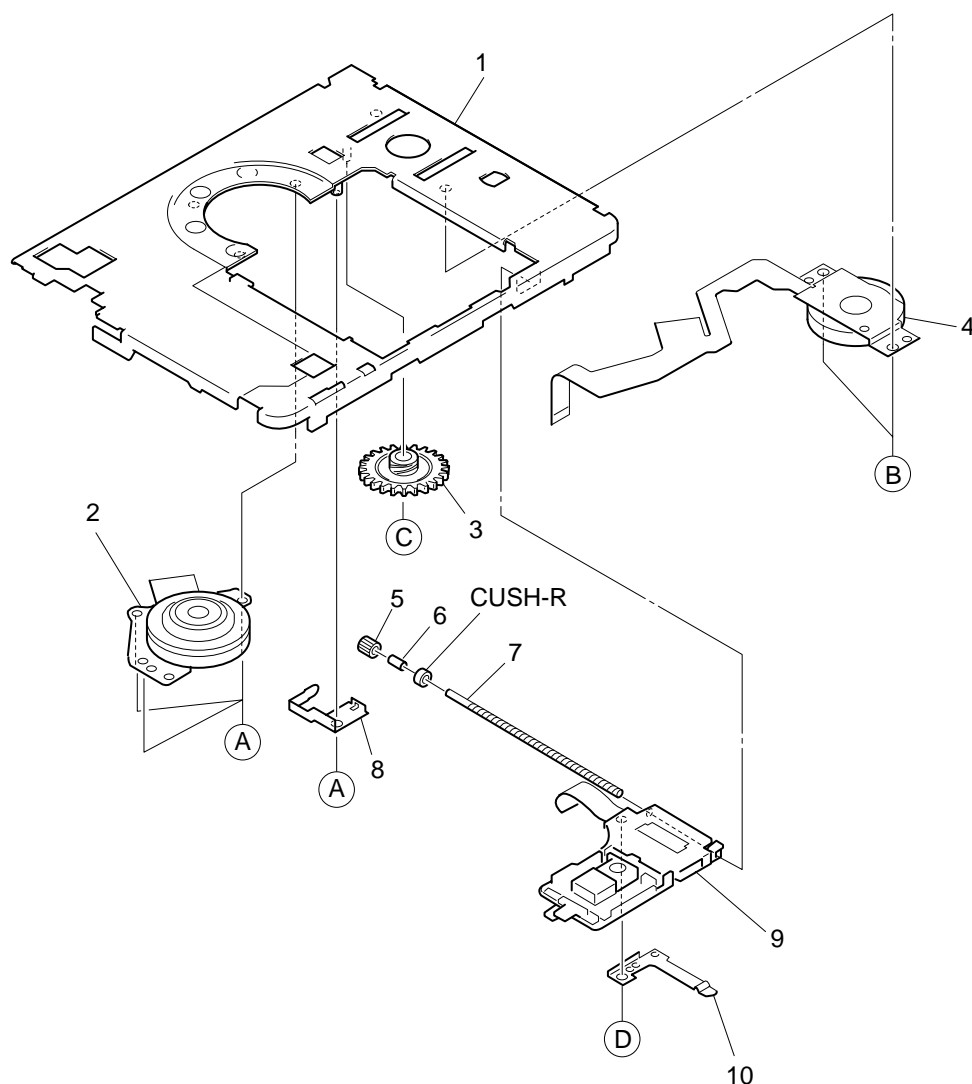
## MECHANICAL PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HM5-001-010		PANEL ASSY, TOP< [W] AHK>
1	8A-HM5-020-010		PANEL ASSY, TOP L< [L] AHK>
1	8A-HM5-012-010		PANEL ASSY, TOP R< [R] AHK>
2	8A-HM5-205-010		BOX ASSY, BATT
3	8A-ZGF-216-010		HLDR ASSY, CTRG
4	8A-ZGF-207-010		SPR-E, EJECT
5	8A-HM5-004-010		FRAME, CENTER< [W] AHK>
5	8A-HM5-023-010		FRAME, CENTER L< [L] AHK>
5	8A-HM5-015-010		FRAME, CENTER R< [R] AHK>
6	8A-HM5-216-010		BAT-CONTACT, -
7	8A-HM5-007-010		KNOB, SL EJECT< [W] AHK, [L] AHK>
7	8A-HM5-017-010		KNOB, SL EJECT R< [R] AHK>
8	8A-HM3-217-010		SPR-E, EJECT
9	8A-HM5-209-010		PLATE, EJECT
10	8A-HM5-201-010		FRAME ASSY, R
11	8A-HM5-006-010		KEY, CONT MAIN
12	8A-HM3-216-010		BAT-CONTACT, EX
13	8A-HM5-005-010		LID, BATT< [W] AHK>
13	8A-HM5-024-010		LID, BATT L< [L] AHK>
13	8A-HM5-016-010		LID, BATT R< [R] AHK>
14	8A-HM5-210-010		HINGE ASSY, BATT
15	8A-HM5-009-010		LENS, OPE
16	8A-HM5-008-010		KNOB, SL HOLD< [W] AHK>
16	8A-HM5-025-010		KNOB, SL HOLD L< [L] AHK>
16	8A-HM5-018-010		KNOB, SL HOLD R< [R] AHK>
17	8A-HM5-213-010		BAT-CONTACT ASSY, +
18	8A-HM5-032-010		PANEL, BOT HKJ LF< [L] AHK>
18	8A-HM5-031-010		PANEL, BOT HKJ RF< [R] AHK>
18	8A-HM5-030-010		PANEL, BOT HKJ WF< [W] AHK>
19	8A-HM5-010-010		PLATE, DECO< [W] AHK>
19	8A-HM5-019-010		PLATE, DECO RAD< [R] AHK, [L] AHK>
A	87-HM1-243-010		S-SCREW, 1.4-1.4 CRNL
B	87-078-186-010		SCRW-SR, 1.4-1.8 CR L
C	8A-HM3-222-010		S-SCREW, +1.4-3.0 CR
D	8A-HM3-233-010		S-SCREW, +1.4-3.5 N

## COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange	GM	Metallic Green
YM	Metallic Yellow	DM	Metallic Orange	PT	Transparent Pink

## MD MECHANISM EXPLODED VIEW 1 / 2



## MD MECHANISM PARTS LIST 1 / 2

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-ZGF-201-010		CHAS ASSY, MECHA
2	87-A91-488-010		MOT, SSM-01C15A
3	8A-ZGF-208-010		GEAR, A
4	M8-ZZS-294-000		ZZS-2 C
5	8A-ZGF-209-010		GEAR, B
6	8Z-ZG5-217-010		BRG, 1.1-2-2
7	8A-ZGF-210-010		SHAFT, LEAD
8	8A-ZGF-212-010		SPR-P, LEAD
9	87-A91-718-010		PICKUP, KMS-330A
10	8Z-ZG5-219-010		SPR-P, RACK 2
A	88-ZG6-224-010		S-SCREW, VBT+1.4-3
B	8A-ZGF-220-010		S-SCREW, V+1.4-1.2
C	87-067-569-010		POLY WASHER 0.83-2.5-0.25
D	8Z-ZG5-223-010		S-SCREW, VBT+1.4-2

## ACCESSORIES / PACKAGE LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
△	1	87-B30-244-010	CHARGER, RB-M02K
	2	8A-HM6-951-010	BAG, CARRING
	3	87-B30-303-110	BAT, MHB-901 (S)
	4	87-B30-221-010	CASE, BATTERY
	5	87-B30-372-010	HEADPHONE, HP-M031 L1< [L] AHK>
	5	87-B30-295-010	HEADPHONE, HP-M031 S< [W] AHK, [R] AHK>
	6	8A-HM6-954-010	CLIP, RC-CL33
	7	8A-HM3-951-010	BOX, BAT ASSY AHM-3< [W] AHK>
	7	8A-HM5-954-010	BOX, BAT ASSY AHM-5 R< [R] AHK>
	7	8A-HM6-952-110	BOX, BAT ASSY AHM-6 L< [L] AHK>
	8	8A-HM5-953-010	RC UNIT, RC-HX70 L< [L] AHK>
	8	8A-HM5-952-010	RC UNIT, RC-HX70 R< [R] AHK>
	8	8A-HM5-951-010	RC UNIT, RC-HX70 W< [W] AHK>
	9	8A-HM5-902-010	IB, HK (ECH)



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